

the epigastrium or along the course of the colon. Epigastric pain is almost invariably associated with peritonitis, and is one of the most valuable indications of its presence and the need for operation in these cases. Tenderness on pressure and referred pain should be kept distinct. Tenderness is usually over the seat of the appendix, but it must be borne in mind that the appendix may be fixed in one of the hernial openings (I found it in the obturator foramen in one of my patients), or, on the other hand, it may be free and move its position considerably, hence the locality of the tenderness may vary greatly. In women it is liable to be confounded with ovarian tenderness, and it is not an uncommon thing for the appendix and ovary to be adherent—both inflamed. I have before pointed out the comparative frequency of appendicitis in young women occurring at the catamenial periods. The presence of a lump again is very misleading. A good proportion of the cases where a localized swelling appears without very marked constitutional symptoms do well, and recover without operation. The absence of such a swelling indicates little, for the appendix may be gangrenous, may be hidden away down in the pelvis, or may be doubled down behind the ileum, and no lump be perceptible at all.

But when we come to abdominal tension, especially with rigidity of the right abdominal muscles, we have an indication of a more definite character, almost always denoting formation of pus or circumscribed peritonitis. This, in conjunction with constitutional symptoms, especially persistent sickness, is almost pathognomonic. In such cases operation is demanded. Constipation is no doubt usually present, but, on the other hand, spurious diarrhoea is not uncommon. There is frequently a history of more or less habitual constipation, with some unusual meal followed by sickness and diarrhoea, which may persist even as the graver symptoms increase. Temperature counts for little, except when a sudden rise gives indication of grave mischief, which is ordinarily apparent enough already. The same as to pulse; it is often quiet, and even slow, when the necessity for operation is clear enough (Case x).

Then as to the grounds on which we ought to operate in acute cases. Each case must be considered on its merits; but one safe rule may be laid down—that with any definite indication of general peritonitis or of increasing prostration denoting septic trouble no time should be lost; where the temperature rises and falls irregularly, with some weakening of pulse and increase of abdominal tension, operation is demanded. Persistent sickness, obstinate constipation, with typhoid symptoms, likewise. Localized swelling, painful and tender to touch, with steady rise and fall of temperature, denotes pus, and ought to be evacuated before bursting into the general cavity. Many such cases are extra-cæcal, and can be safely opened and drained from outside the peritoneum. Nearly all these do well.

The more I see of appendicitis the more am I convinced that it is far safer to operate too soon than defer it a minute too long. It is true the graver ones come most under my observation, and I frequently am not asked to see them until all doubt as to the wisdom of operation has passed; still even where we deem it wisest to wait in hope, we too often find that hope deferred maketh the patient's heart sick, and sudden symptoms of the worst character arise while we are hoping for the best. One case in this list especially emphasizes this, for Dr. Russell and I were both agreed in the case of Miss L. that we might safely wait, as the symptoms were apparently (I say "apparently" advisedly) improving, and the girl herself was cheerful and comfortable. Yet you have heard what happened. Sudden collapse, with acute peritonitis, and fortunately for her she was operated on in less than two hours after and her life saved. If she had lived far away from the surgeon and the telephone, or he had acted less promptly, that girl would certainly have died. We ought to have done it the day before, apparent improvement notwithstanding. I hope you will not misunderstand me; a certain proportion of patients will get well with ordinary care and treatment, especially strict recumbency; but in all cases of doubt it is far safer for the patient, and more to the credit of surgery, to act soon, and make practically certain of saving the patient's life. Friends have something to account for in some cases, for the pleadings for delay serve just to tip the balance of doubt in the doctor's own mind, and lead him to consent to delay, even sometimes where his unfettered judgement would decide otherwise.

As to the nature of the operation, that can only be decided after it is begun. When the appendix can be safely removed,

I always remove it; but this is sometimes impossible, and the condition of the patient often requires as rapid and as simple a procedure as can be. In all instances free drainage may stave off imminent death, and prove the first step towards complete recovery, even were it is not possible to do more. No one ought to be allowed to die unopened, unless actually moribund. Some most desperate cases do get well.

NOTES ON AN INEFFECTUAL TREATMENT OF CANCER ;

BEING A RECORD OF THREE CASES INJECTED WITH DR. OTTO SCHMIDT'S SERUM.*

By D'ARCY POWER, F.R.C.S.ENG.,

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So much has been written lately about cancer that when your able Secretary—Mr. J. R. Johnson—asked me to read a paper before you, taking malignant disease as my text, I was more than half inclined to excuse myself on the ground that I had nothing of importance to communicate; but just about the same time my friend, Dr. Harold Johnson, came with a glowing account of a new method of treatment introduced by Dr. Otto Schmidt, of Köln, and I told him that if he would procure the serum I would provide the patients, and would afterwards give, as far as possible, an unbiased account of the results obtained by its use. The notes of these cases, and the conclusions which I draw from them I now propose to bring before you, for I know that, like the Athenians of old, the members of the Richmond Division of the Metropolitan Counties Branch of the British Medical Association, love "to spend their time in nothing else but either to tell or to hear some new thing." Besides, I think in so important a subject as cancer, with its apparently increasing mortality, that a fair trial ought to be given to every method of treatment which promises to give relief, provided that method can be adopted without ill-consequences to the patient. Such trials are most fittingly carried out by those who, like myself, are working in the wards of a large general hospital, for the test can then be conducted upon lines which will at least ensure an accurate record of results. The patient can be watched with a scientific accuracy which is impossible in private, for one has the assistance of the house-surgeon and dresser, the ward sister and the nurses. The observations, too, are checked and counterchecked, so that there can be no question as to their accuracy and as to entire absence of bias attending their record. I take this opportunity, therefore, of thanking Mr. Waterfield and Mr. Gurley, as well as Sister Lucas, Sister Henry, and their nurses, for the assistance they have given me in obtaining the detailed information which I shall presently submit to you.

Dr. Harold Johnson's account of Dr. Otto Schmidt's work appeared in the *Lancet* for November 14th, 1903, p. 1374, under the title "Dr. Otto Schmidt's Specific Treatment of Cancer," and his paper gained a somewhat wider circulation than was intended, as a long abstract appeared in the *Daily Mail*. The points upon which special stress is laid appear to be three in number. First, a specific reaction indicated by a general rise of temperature; secondly, local manifestations connected with the new growth; thirdly, alterations taking place in the new growth in the direction of its conversion into scar tissue. I quote a few passages from Dr. Johnson's paper on each of these heads:

1. The most constant and striking result of the injections into the body of a cancerous patient is a specific reaction in the tumour and infected parts. Injections of the cultures into a healthy subject or into one suffering from any other disease produce no symptoms whatever beyond the pinprick of the hypodermic needle. But if the cancerous process is in the body then the specific reaction is produced whenever there is any recuperative power in the blood of the patient. After the second or third injections, and generally eight or ten hours afterwards, there is a general sense of *malaise*. The temperature rises more or less: most often the evening temperature alone is raised, but sometimes the morning temperature is also affected. In a few cases the highest temperature is found in the early morning hours. The rise may occur suddenly, or it may go up by daily increments to 102° F., then it falls to the normal in two or three days. The primary rise of reaction may go on in spite of the discontinuance of injections as soon as the temperature rises at all. Patients whose blood is already poisoned by toxins—cachectic patients—often do not react at all.

2. Local signs and symptoms are noticed about the same time as the

* Read at a Meeting of the Richmond Division of the Metropolitan Counties Branch of the British Medical Association.

first rise of temperature. The constant symptoms are, first, swelling of the tumour and of any metastatic deposits or secondary glands; secondly, pain in the parts or increase of pain if such were previously present; and thirdly, tenderness of all affected parts....The examining hand is often led by the pain indications to find metastatic glands and deposits where the most careful examination failed to detect them previously....The activity of the reaction varies very much in individuals and diminishes as the patient becomes more immune. As far as can be told at present closed carcinomata react more violently than those which are free or consist of breaking-down cells. Cachectic patients hardly react at all—and where I say cachectic patients I mean those who are suffering from the cancerous cachexia properly so-called, not those who on account of oesophageal or gastric cancer are suffering from starvation cachexia.

3. The reaction is of an inflammatory nature, confined to the cancerous parts, more or less acute according to the newness of the growth and the condition of the patient. It is of short duration, a few days only. A chronic state of inflammation can be induced by setting up reactions at short intervals or by raising the injections gradually but without pause.

Dr. Johnson then proceeds to argue that the inflammatory process arrests the growth of the cancer, which very soon afterwards begins to degenerate, and eventually becomes converted into cicatricial tissue.

Now here are definite statements capable of proof or disproof. Dr. Otto Schmidt, in a manner worthy of all commendation, was willing to allow his serum to be used by independent observers without imposing any conditions in order that its utility might be tested. Dr. Johnson, who is the chief medical officer to the Gresham Life Assurance Co., with no object to serve but that of truth, visited Köln, watched Dr. Schmidt's methods, brought back the serum, and made a series of injections in my presence. It is only by such plain dealing that we can hope to obtain conclusive results, and if the conclusions at which I have arrived do not bear out the optimism of Dr. Otto Schmidt, as voiced by Dr. Johnson, we still owe him a debt of gratitude for the work done, whilst we wish him the success he deserves.

The cases I selected for trial of the serum were (1) a woman from whom I had recently removed a part of the breast for a scirrhus carcinoma; (2) a man, the half of whose tongue I had removed for epithelioma; (3) a patient from whose neck I had removed a malignant growth the origin of which was not clear.

CASE I.

E. B. (St. Bartholomew's Hospital Female Surgical Register, vol. i, 5903, No. 2705), aged 46 and single, came under my care on August 21st, 1903, complaining of a tumour in the left breast which she had only noticed for six months, though she had felt pain in the breast for more than twelve months. She said too that her left arm often felt numb. On admission to the hospital the left breast contained a hard nodule measuring about $1\frac{1}{2}$ in. in diameter, adherent to the skin and situated at the upper and inner quadrant of the gland. No enlarged lymphatic glands could be felt in the axilla, and the tumour was freely movable on the underlying tissues. I removed the growth with the pectoral fascia and some of the pectoral muscle on August 26th, but not the whole breast, and the patient left the hospital a week later. The pathological report stated that the growth was a scirrhus carcinoma.

She returned to the hospital on November 23rd complaining of neuralgic pains in the scar, and on this day the notes state that "there is a linear scar in the left breast starting just internal to the nipple and extending upwards and inwards for 5 in. The scar is not adherent to the deeper tissues, and presents no induration. The breast is normal and shows no indication of any chronic inflammatory change either nodular or diffuse. The nipple is not retracted, and no enlarged lymphatic glands can be felt in either axilla or in the left supraclavicular or infraclavicular regions.

The temperature was 98.6° F., the pulse 90, and the respirations 24. Four one-hundredths of a milligram of Schmidt's killed culture were injected at 3.30 p.m. into the upper part of the right pectoral region, the seat of puncture being first frozen with ethyl chloride.

At 8 p.m.	the temperature was 98.8° F., pulse 90, respirations 20
At 10 p.m.	" " 99.2° F., " 88, " 24
At 12 midnight	" " 99.0° F., " 92, " 24
At 2 a.m.	" " 98.6° F., " 92, " 24
At 7 a.m.	" " 98.6° F., " 90, " 24

November 24th. The patient said that she had suffered a good deal of pain in the left breast during the night. At 3.30 p.m., that is, twenty-four hours after the injection, a small and very hard gland of the size of a pea could be felt at the apex of the left axilla, where no such gland had existed on the previous day.

An injection—Injection 2—of half a milligram of Schmidt's culture was made into the upper part of the right pectoral region, the seat of puncture being frozen with ethyl chloride. The temperature at the time of the injection was 98.6° F., the pulse 90, and the respirations 24.

At 7.30 p.m.	the temperature was 99° F., pulse 84, respirations 24
At 9.30 p.m.	" " 99.6° F., " 80, " 24
At 11.30 p.m.	" " 99° F., " —, " 24
At 1.30 a.m.	" " 98.6° F., " 88, " —

November 25th. The lymphatic gland at the apex of the left axilla is larger and not quite so hard as on the previous day. The left

breast still remains painful, and a small tender lump can be felt just below the nipple. The scar is certainly more tender than it was. A blood count showed the number of white blood corpuscles to be 5,000, so there is no leucocytosis. No injection was given on this day.

November 26th. 1 mg. of Schmidt's culture (the third injection) was injected at 4 p.m., the temperature being 98.8° F., the pulse 72, respirations 24.

At 8 p.m.	the temperature was 99.6° F., pulse 76, respirations 74
At 10 p.m.	" " 99° F., " 80, " 28
At 12 midnight	" " 98.8° F., " 80, " 24
At 1 a.m.	" " 98.6° F., " 80, " 24
At 5 a.m.	" " 98.8° F., " 80, " 24

November 27th. The enlarged lymphatic gland in the left axilla is still tender and painful on pressure but it has not increased in size. No other enlarged glands can be felt in either axilla nor are there any in the neck. An injection of 2 mg. of Schmidt's culture (the fourth injection) was made at 4 p.m., the temperature at the time being 99.8° F., the pulse 84, respirations 24.

At 4 p.m.	the temperature was 100.0° F., pulse 84, respirations 24
At 8 p.m.	" " 99.6° F., " 84, " 24
At 10 p.m.	" " 99° F., " 90, " 28
At 12 midnight	" " 98.4° F., " 84, " 28
At 2 a.m.	" " 98.0° F., " 80, " 24
At 6 a.m.	" " 99.4° F., " 76, " 24
At 10 a.m.	" " 99.4° F., " 80, " 24

November 28th. 5 mg. of Schmidt's culture (the fifth injection) was made at 1.50 p.m., the temperature being 99.8° F. and the pulse 80.

At 6 p.m.	the temperature was 100.0° F., pulse 88, respirations 24
At 8 p.m.	" " 100° F., " 88, " 20
At 10 p.m.	" " 99.6° F., " 88, " 20
At 12 midnight	" " 99.4° F., " —, " —
At 4 a.m.	" " 98.6° F., " 80, " 20
At 8 a.m.	" " 100.0° F., " 88, " 24

November 29th. The patient was not injected to-day, as she appeared to be rather feverish. Her maximum temperature during the day was 100° F., and the highest pulse-rate was 89, both at 8 a.m. The temperature then fell gradually until it reached 97.6° F., and the pulse 64 at 12 o'clock midnight.

November 30th. One cg. of Schmidt's culture was injected at 4.30 p.m. (the sixth injection), the temperature at the time of the injection being 98.4° F., the pulse 68, and the respirations 20. At 10 p.m. the temperature was 99° F., pulse 80, respirations 24. At midnight the temperature was 99.8° F., pulse 76, respirations 24.

December 1st. The patient complained of a good deal of pain. The left breast was still tender, and the lump below the nipple was larger but not so hard. A second enlarged lymphatic gland could be felt in the left axilla. It was situated below the one originally felt. The first gland was still tender, but had not increased in size. One and a-half cg. of Schmidt's culture (the seventh injection) were injected at 4 p.m., the temperature being 99.2° F., the pulse 72, and the respirations 28. At 8 p.m. the temperature was 99.2° F., pulse 88, respiration 20; at 4 a.m. the temperature was 99° F., pulse 84, respirations 22.

December 2nd. The patient had suffered a good deal of pain, and an enlarged axillary gland could now be felt in the right axilla. There was also a distinct line of induration in the breast tissue on either side of the scar. I did not feel justified, therefore, in recommending a continuance of the injections, and on the following day, December 3rd, I removed the left breast, the pectoral fascia, and a part of the pectoral muscle, together with the enlarged axillary glands from the left axilla and the enlarged gland from the right axilla. The wounds healed by first intention, and the patient left the hospital on December 17th. Dr. F. W. Andrewes (our Lecturer on Pathology) and Mr. G. E. Gask (his Demonstrator of Surgical Pathology) were present at the time of the operation, and they put the suspected portions of the breast and the lymphatic glands into hardening fluids before leaving the theatre. In due course the following report was received from the Pathological Laboratory, signed by Mr. Gask and corroborated by Dr. Andrewes: "The sections of the breast showed nothing abnormal beyond a small amount of inflammation which might well be accounted for by the previous operation. There was no sign of any malignant growth. None of the lymphatic glands showed any trace of carcinoma."

I think that this case was a satisfactory test of Schmidt's culture. The patient was a woman in good condition, who had undoubtedly suffered from cancer quite recently. She reacted to the injections in the manner predicted, and her lymphatic glands became enlarged first on the side connected with the breast which had been affected, and afterwards on the side where the injections were made. The breast tissue in the immediate neighbourhood of the scar became indurated and tender. It appeared, therefore, as if the serum might be valuable as a diagnostic agent. But this hope was dispelled when a microscopic examination showed that the swelling was merely inflammatory, and that neither the breast nor the lymphatic glands were carcinomatous. The explanation of the reaction therefore appears to be that the serum intensifies any chronic inflammatory process which is going on in the body and has itself some power of setting up inflammation.

CASE II.

The next patient upon whom the cultures were tried was a man aged 46, a porter by occupation, who first came under observation in March, 1903, saying that he had noticed a pimple on his tongue since December

1902. The pimple increased rapidly in size in spite of full doses of potassium iodide, and on June 5th I removed the left half of his tongue. The patient left the hospital on June 15th, and microscopic examination showed that the tongue was the seat of a squamous-celled carcinoma.

On November 15th the patient was readmitted to the hospital on account of a secondary deposit of cancer in the neck. The deposit was in the form of an irregular mass measuring $3\frac{1}{2}$ in. by $2\frac{1}{2}$ in., situated just below the angle of the jaw on the left side of the neck. The mass was painless, but so fixed that I considered it to be incapable of removal without undue risk.

At 6 p.m. on November 18th, 20 minims of sodium cinnamate were injected subcutaneously over the tumour, and at 5.15 p.m. on November 25th the same quantity was injected into the tumour itself. In neither case was there any evidence of reaction, as shown by the temperature, pulse, or respiration.

On November 28th an injection of one-tenth of a milligram of Schmidt's serum was made at 1.45 p.m., the temperature at the time of injection being 98.4° F., the pulse 88, and the respirations 20.

At 3 p.m.	the temperature was 98.4° F., pulse 84, respirations 22
At 5 p.m.	" " 98.0° , " 92, " 24
At 7 p.m.	" " 98.6° , " 96, " 24
At 9 p.m.	" " 98.4° , " 92, " 20
At 11 p.m.	" " 98.4° , " 92, " 20
At 1 a.m.	" " 97.8° , " 72, " 20
At 3 a.m.	" " 98.0° , " 80, " 20
At 7 a.m.	" " 97.0° , " 100, " 20
At 11 a.m.	" " 97.0° , " 84, " 20

November 29th. The patient complained of a good deal of pain during the night, the pain being felt over the whole of the left side of the head and neck. The cervical lymphatic glands are not enlarged.

November 30th. $\frac{1}{2}$ mg. of Schmidt's culture was injected at 6 p.m., the temperature being 97° F. and the pulse 88. There was a sudden rise of temperature to 98° F. at 11 p.m., and the patient complained that the tumour was very tender. An enlarged gland could be felt in the left supraclavicular fossa.

December 1st. An injection of 1 mg., the temperature being 98.8° and the pulse 84. This was followed by a maximum temperature of 99.2° at 8 p.m. but with no local change.

December 2nd. An injection of 2 mg. at 3.30 p.m., and on the following day the tumour was thought to be a little larger and more tense. A second enlarged lymphatic gland could be felt in the posterior triangle on the left side of the neck.

December 3rd. The injection of 5 mg. was followed by a slight rise of temperature, the maximum being 99.2° F., and the pulse 88 at 8 p.m. The swelling was more tense and a little larger, while another small and hard gland could be felt in the posterior triangle on the left side of the neck.

December 4th. A centigram of Schmidt's culture was injected, and this amount was gradually increased until $2\frac{1}{2}$ cg. were injected into the upper part of the pectoral region on December 8th. On this day a small oval ulcer with a raised and everted edge developed on the left side of the tongue opposite the last molar tooth.

Injections of 2 cg. of culture were made on December 9th and 10th, but without any marked effect. The tumour in the neck was then becoming inflamed; it suppurated on December 21st, when it was incised under an anaesthetic, about an ounce of pus escaping. The incision soon became an ulcer, which presented the ordinary characters of a carcinomatous ulcer. He went from bad to worse and died on January 18th, 1904. The necropsy showed that there were no secondary deposits.

The condition of this patient did not appear to me to be in any way modified by the injections of the culture. He was beyond operation when I admitted him to the hospital, as he was suffering from extensive secondary deposits of epithelioma in the glands of his neck. The affection ran the course which might have been expected had he undergone no treatment, the glands suppurating as a result of infection carried by the lymphatics from the cancerous ulcer in his mouth. He received sixteen injections of the culture and two injections of sodium cinnamate.

CASE III.

D. G., aged 63, a messenger, was admitted into St. Bartholomew's Hospital under my care on August 19th, 1903, on account of a malignant growth of his neck. On admission he was found to have three swellings in his neck, one being situated on each side beneath the angle of the jaw, whilst the third was situated in the middle third of the neck on the left side. The tumours were hard but not circumscribed. The skin over them was movable, but the growths themselves were fixed to the subjacent tissues.

On August 28th, 1903, I removed the two smaller tumours without difficulty, but the third and larger one was found to be very adherent to the larynx and to the internal jugular vein, a piece of which had to be removed. The patient left the hospital on September 18th, and the pathological report stated that the tissue "shows malignant disease, the nature of the malignancy is not clear, but on the whole it resembles a carcinoma rather than a sarcoma."

The patient was readmitted to the hospital on November 16th, 1903. He then had a hard and irregular-shaped swelling on the left side of his neck, extending from just below the ear to the clavicle, and filling up the space between the anterior border of the trapezius and the sternomastoid muscles. The tumour is not movable upon the deeper structures, but the skin over it is normal and not adherent. The tumour is

painful, the pain being of a neuralgic character, and extending up the side of the neck into the ear and on to the face.

November 18th. Twenty minims of a 10 per cent. solution of sodium cinnamate were injected at 3.15 p.m., the temperature being 98.4° F., pulse 84, and respirations 24. In the evening the temperature rose to 99° , and the pulse was 80. On the following day the pulse was subnormal.

November 23rd. One-tenth of a milligram of Schmidt's culture was injected beneath the skin over the lower part of the right scapula. The injection was made at 3.45 p.m., the temperature being 98° F., the pulse 84, and the respirations 22.

At 7.45 p.m.	the temperature was 98.4° F., pulse 84, respirations 22
At 9.45 p.m.	" " 98.0° , " 68, " 22
At 11.45 p.m.	" " 97.8° , " 76, " 24
At 1.45 a.m.	" " 97.8° , " 76, " 24
At 3.45 a.m.	" " 98.2° , " 80, " 20
At 5.45 a.m.	" " 97.6° , " 76, " 20
At 9.0 a.m.	" " 98.6° , " 84, " 20

November 24th. The patient has not complained of any increase of pain during the night. The skin over the tumour is unaltered, and the neighbouring lymphatic glands are not enlarged.

November 25th. The tumour appears to be more tender and painful. The patient had a little sore throat, so a further injection was deferred until the next day.

November 26th. An injection of 1 mg. was made at 4 p.m., the temperature being 98.2° F., and the pulse 88.

At 7 p.m.	the temperature was 98.0° F., pulse 84, respirations 20
At 10 p.m.	" " 97.8° , " 88, " 24
At 12 midnight	" " 98.4° , " 80, " 20
At 2 a.m.	" " 97.8° , " 80, " 24
At 4 a.m.	" " 97.6° , " 76, " 20
At 6 a.m.	" " 97.0° , " 100, " 20
At 8 a.m.	" " 97.6° , " 88, " 20
At 10 a.m.	" " 98.2° , " 96, " 24

November 27th. The patient complained of a good deal of pain during the night. The tumour is tender but has not increased in size. There is some superficial redness and a small hard lymphatic gland can be felt in the posterior part of the left axilla. An injection of 1 mg. of Schmidt's serum made at 4 p.m. was followed by a rise of temperature which reached its maximum, 99.6° F., at 11 p.m. The temperature had fallen to normal on the following morning.

November 29th. A further injection of Schmidt's serum was made at 2 p.m., the temperature being 98.4° , the pulse 99, and the respirations 24.

At 3 p.m.	the temperature was 98.4° F., pulse 96, respirations 24
At 5 p.m.	" " 97.8° , " 100, " 20
At 7 p.m.	" " 98.8° , " 100, " 24
At 9 p.m.	" " 99.8° , " 96, " 24
At 11 p.m.	" " 97.6° , " 96, " 24
At 1 a.m.	" " 98.0° , " 96, " 20
At 4.30 a.m.	" " 98.2° , " 96, " 24
At 7 a.m.	" " 98.0° , " 108, " 24
At 9 a.m.	" " 97.6° , " 88, " 24
At 11 a.m.	" " 98.4° , " 96, " 24
At 3 p.m.	" " 98.0° , " 88, " 24

There was here a short but sharp rise of temperature, lasting less than four hours, but without a corresponding increase in the pulse-rate.

November 30th. An injection of 0.002 gram of Schmidt's serum was made at 6 p.m., the temperature being 98° F., and the pulse 76. There was a gradual rise of temperature to a maximum of 99° F. at 12 o'clock midnight, when the pulse was 100.

The quantity of serum was slowly increased, until 3 cg. were injected on December 8th, and again on December 9th, but without producing more than a slight rise of temperature. The note states that on December 9th the tumour had not increased in size, but that it still remained very tender. The patient continually suffers pain, which is worse about three hours after each injection. After December 9th the quantity of culture injected was reduced to 1 cg., but without any marked effect until December 28th, when 0.01 gram was injected into the right scapular region, the temperature at the time being 99.4° F., and the pulse 100. During the night there was a sudden rise of temperature to 101.2° F. The pulse at 7.30 next morning was 108, and the temperature was 99.2° F. This attack of fever was not accompanied by any increase of pain, but on the next day the patient had an ordinary attack of tonsillitis. This patient was injected on one occasion with sodium cinnamate, and nineteen times with Schmidt's culture.

Now, as to the conclusions to be derived from these cases. Dr. Johnson says, "You will have noticed that I have been very careful to speak always of the treatment of the cancerous process, and that I have never in connexion with Dr. Schmidt's name, or what I have described, referred to this treatment as a cure of cancer." He merely claims that the "treatment is to be employed as a prophylactic immunization immediately after the surgical operations for the removal of malignant growths." For this reason the three cases submitted to treatment had already been operated upon within a recent period. The tumour removed had been submitted to microscopical examination and was known to have been cancerous. To avoid any complication none of the cases selected showed any sign of suppuration.

1. In regard to the reaction. There is no doubt that a reaction takes place after the injection of Schmidt's serum.

The temperature rises and with it the pulse, but the respirations as a rule are not affected. In this rise of temperature I see nothing peculiar, for it follows the injection of serum which admittedly contains toxins, and in all probability any similar serum would produce a similar result if it were active. It cannot therefore be said with accuracy that the reaction is specific, and this is proved by the fact that Case I showed the most typical reaction, yet subsequent examination of her tissues failed to detect any malignant disease.

2. The local effect upon the tumour was shown in each case, for the breast in the first case and the malignant masses in the other two cases became inflamed and reddened as the result of the injection. Yet here, again, I could not satisfy myself that the serum acted by selection upon malignant tissues only. It seemed to me to intensify any pre-existing inflammation. This was effectually shown in Case I, where the lymphatic glands in the right axilla became enlarged in addition to those in the left armpit, the original seat of cancer being the left breast. For here, again, subsequent examination showed that none of the glands which had thus become enlarged after the injections of the culture were affected with cancer.

3. The treatment is certainly painful apart from the success of hypodermic injections.

Lastly, malignant disease progresses, even to a fatal issue, whilst the injections are being given, as is shown by Case II. I fear, therefore, that as my experience goes the method is of no service at present either from a prophylactic, diagnostic, or curative standpoint. But it may fairly be argued that the trial I have given is insufficient, and that further observations are desirable, for Case I was not suffering from cancer and Case III remained very much in statu quo ante.

ACUTE SEPTIC COLITIS DUE TO MILK POISONING.

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The following case appears worthy of record:

On October 30th I was called to see E. L., aged 32. He complained of aching pains in his neck and over his left shoulder. Some of the cervical glands were swollen and tender, his tongue furred, temperature 99°, pulse 100. He stated he had been ill the previous week with "influenza," and an attack of "jaundice." It was further elicited that during the last eighteen months he had had several slight attacks of jaundice. The left apex of the lung indicated tuberculous lesion probably old. No other physical signs were evident.

Progress.—On November 1st he was much better, and the pains in the neck and shoulder had almost disappeared. On November 3rd the patient was seized with severe pain in the left lumbar region radiating towards the groin. During abdominal examination he said the pain had shifted to the right hypochondrium, passing up to the right shoulder. Slight enlargement of the liver and spleen was detected at this time. Temperature 100.3°, pulse 110, urine normal. The pain was intense and paroxysmal, and called for repeated doses of morphine hypodermically ($\frac{1}{2}$ gr.).

November 4th. He was considerably easier: the pain, now much less, was confined to the hepatic and right iliac regions, and these parts were tender on pressure.

During the following ten days he remained in much the same condition, the severity of the pain varying from day to day, but on the whole decreasing, so that he was able to get up and about, and on November 13th went out of doors.

On the evening of November 15th he had a severe shivering fit, and it was also stated that he was "jaundiced," but by gaslight this could not be detected, nor was there any icterus the following morning.

November 16th. The pain had returned with greater intensity, and was diffused over the right hypochondriae, epigastric, and umbilical regions. His bowels were loose, but the stools were otherwise normal in appearance, and temperature 98.8°.

November 17th. There was practically no change in the symptoms. The temperature remained normal, the pulse increased in rapidity (120), and he became more feeble. The pain was relieved temporarily by morphine.

November 18th. The motions became more frequent and contained a little bright blood and small pieces of mucus. Slight tenesmus and occasional vomiting occurred. Temperature 98°, pulse 130.

November 19th. The abdomen was slightly distended, vomiting more frequent, and blood and mucus in considerable quantities passed in the stools. Temperature 97°, pulse 135.

Result.—November 20th. The patient was considerably worse, suffering intense pain which all treatment failed to relieve. The abdominal distension was increased and continued to increase rapidly during the day, pointing to the onset of peritonitis. Stools exactly resembled red

currant jelly and were very offensive. Vomiting was constant and the ejecta were liquid and of a grass-green colour; even teaspoonfuls of water could not be retained. He suffered severe paroxysmal pains radiating all over the abdomen, but most marked on the right side and epigastrium. The pulse became more feeble and more frequent. He rapidly sank, and died at 12.20 a.m. on November 21st, retaining consciousness to the end.

Necropsy.—On examination fifteen hours after death rigor mortis was well marked. On opening the abdomen, about half a pint of free blood-stained fluid escaped. The caecum, ascending colon, and proximal half of transverse colon were enormously distended and of purplish-red colour. The distal half of the transverse colon, splenic flexure, and upper part of the descending colon were only slightly congested and distended, but the lower part of the descending colon with sigmoid flexure was swollen and deeply congested. The rectum was normal. A few flakes of recent lymph were observed on the surface of the caecum. The large gut, on removal, was found to contain very offensive black fluid, though not in large quantity. The portions above noted were found greatly dilated, and the walls on section nearly $\frac{1}{2}$ in. in thickness. The caecum was the part most affected, and here small white patches were visible on the inner aspect, which proved to be collections of small air-bubbles beneath the mucous membrane. On compressing the intestinal wall between the finger and thumb distinct emphysematous crackling could be both felt and heard. The duodenum and the upper 2 ft. to 3 ft. of small intestine were congested and somewhat distended with dark fluid contents. The rest of the small intestine and the appendix vermiformis were perfectly normal. The liver was enlarged, the lower edge reaching about two fingerbreadths below the costal arch. The portal vein contained fluid blood. On section the surface of the liver appeared normal, but here and there were yellowish-white patches which proved to be medium-sized portal tributaries containing decolorized thrombus, and in one spot a recently thrombosed vessel was divided. The other abdominal organs were normal. Chest: Apex of the lung fixed to the chest wall by old pleural adhesions. The apex itself puckered and contracted by fibrous tissue. Lungs elsewhere normal. Heart normal.

Pathological Report (by Dr. Spitta of St. George's Hospital).—Macroscopically, the liver is smooth and slightly shrunken: microscopically, the appearances presented are those of an acute toxæmia, and in many respects simulated acute yellow atrophy. There is, however, a very widespread thrombosis of the intralobular blood vessels, and this, coupled with the minute pathological appearances of the intestine, points to the primary cause being thrombosis of the portal vein and its branches. The intestine, macroscopically, is oedematous, soft, and spongy, whilst the internal surface is covered with minute gas bubbles, probably the result of micro-organic decomposition. Microscopically there is very little inflammation and no ulceration. The mucous coat is either absent or markedly necrotic, whilst the main wall of the gut presents an obvious capillary thrombosis, which is most distinct and characteristic. The peritoneal coat is slightly inflamed. In my opinion these morbid changes are due to a thrombosis in the branches of the portal vein.

The pathological examination having established the septic nature of this case, it is quite clear it was also due to the contaminated milk supply, which the medical officer of health (Dr. Pierce) found to be the cause of the then prevailing epidemic of septic sore throats. The patient was supplied with milk from one of the two dairies condemned, and to within a few days of his death he drank of this milk freely. The case was most puzzling until a few days before death, and without the *post-mortem* and pathological examinations much would have remained obscure. In the first place, acute colitis is very rare, and there were few symptoms in the early stage of the disease to indicate its nature. In fact, pain was the only thing complained of, and that was misleading owing to its paroxysmal and shifting nature, leading me at one time to suspect renal colic, which was soon dispelled for biliary colic, and the history of repeated attacks of jaundice seemed to confirm this latter diagnosis. Yet the gall bladder and the ducts were found normal and healthy at the necropsy. There was no trace of albumen in the urine, and the faeces gave no clue until three days before death; the bowels, however, were somewhat confined. The absence of high temperature, with increasing rapidity of the pulse, enlargement of the liver and spleen, should have been of diagnostic value as pointing to toxæmic absorption had I then any reason to suspect such. The medical officer of health's report concerning the epidemic appeared later. The septic nature of this epidemic manifested itself in various ways. Commencing, as a rule, with acute lacunar tonsillitis, many cases were followed by enlarged and suppurating cervical and submaxillary glands, others were accompanied by acute rhinitis, pharyngitis, laryngitis, with acute oedema of the glottis, parotitis, arthritis, erysipelas of the face, and a case of acute glossitis with Ludwig's angina. This was treated with the antistreptococcus serum with excellent results, and most likely had the serum been used in these other cases the result would have been very beneficial.